What is claimed is:

1. A permanently-connected building-entrance surge protector for a single phase power line, said protector comprising:

a metal-oxide varistor having two electrodes and being coupled at one electrode to a power line at a location adjacent to a building entrance; and

a gas-discharge tube having a line electrode connected to the other electrode of the metal-oxide varistor and having a ground electrode connected to a building ground at the location adjacent to the building entrance.

2. A surge protector as recited in claim 1 wherein the metal-oxide varistor is coupled to the power line through a series-connected fuse.

3. A surge protector as recited in claim 1 further comprising a second metal-oxide varistor having two electrodes and being coupled at one electrode to the power line at the location adjacent to the building entrance, and wherein the gas-discharge tube has a second line electrode connected to the other electrode of the second metal-oxide varistor.

4. A surge protector as recited in claim 1 wherein the second metal-oxide varistor is coupled to the power line through a series-connected fuse.

5. A permanently-connected building-entrance surge protector for multi-phase power lines, said protector comprising:

a first metal-oxide varistor having two electrodes and being coupled at one electrode to a first power line at a location adjacent to a building entrance;

a first gas-discharge tube having a line electrode connected to the other electrode of the first metal-oxide varistor and having a ground electrode connected to a building ground at the location adjacent to the building entrance;

a second metal-oxide varistor having two electrodes and being coupled at one electrode to a second power line at the location adjacent to the building entrance; and

a second gas-discharge tube having a line electrode connected to the other electrode of the second metal-oxide varistor and having a ground electrode connected to the building ground at the location adjacent to the building entrance.

6. A surge protector as recited in claim 5 further comprising a coupling capacitor connected between the two power lines at the location adjacent to the building entrance.

7. A surge protector as recited in claim 5 wherein each of the metal-oxide varistors is coupled to a power line through a series-connected fuse.

8. A permanently-connected building-entrance surge protector for multi-phase power lines, said protector comprising:

a first protector sub-circuit connected between a first power line and a building ground at a location adjacent to a building entrance; and

a second protector sub-circuit connected between a second power line and the building ground at the location adjacent to the building entrance;

wherein each protector sub-circuit includes two metal-oxide varistors each having two electrodes and each being coupled at one electrode to a power line, and a gas-discharge tube having two line electrodes each connected to the other electrodes of the metal-oxide

varistors and having a ground electrode connected to the building ground at the location adjacent to the building entrance.

9. A surge protector as recited in claim 8 wherein each of the metal-oxide varistors is coupled to a power line through a series-connected fuse.

10. A surge protector as recited in claim 8 further comprising a third protector sub-circuit connected between the first power line and the building ground, and a fourth protector sub-circuit connected between the second power line and the building ground.

11. A surge protector as recited in claim 8 further comprising a coupling capacitor connected between the two power lines at the location adjacent to the building entrance.

12. A surge protector as recited in claim 8 providing AC power surge protection of greater than 10 kilovolts open circuit and 40,000 amperes short circuit.

13. A surge protector as recited in claim 8 wherein the protector is located within 2 meters of the building ground.

14. A surge protector as recited in claim 8 wherein the inductance between the protector and the building ground is less than 2.5 microhenries.